(3) REMARKS

Claim Ojections

Claim 3 is objected to for misspelling the word "acetylated". Correction has been made.

Claims 4-8 have been objected to for improper dependency. Correction has been made.

Claim Rejection – Anticipation

Claims 1-3 are rejected under 35 U.S.C. §102(e) as defining an invention that is anticipated by United States Patent No. 6,617,446 to Papadopoulos, *et al.* This rejection is respectfully traversed. The starches of the invention are different chemically, physically and functionally from those of the reference.

It will be recalled that the invention relates to to shear thickening pregelatinized starch. The starches of the invention can be easily further processed at low, workable viscosities, but upon application of significant mechanical action (*e.*g., shear by various mixers, Lightnin'™ Mixer, Waring™ blender, colloid mill, *etc.*), build higher, desirable product viscosities.

Pregelatinized starches characterized by this novel combination of properties have not been reported previously and are in no manner taught or suggested by United States Patent No. 6,617,446 to Papadopoulos, *et al.*

To clarify the points of distinction, applicants briefly refer to the examples in the application wherein it is pointed out that:

(1) The viscosity of the inventive starches increases as shear is increased from a low level to a high level. Figure 1 shows a viscosity profile for a preferred starch (described as the

granular CWS *high* cross-linked potato starch identified in Table 1) after both low and high shear mixing. The starches of the invention have a low viscosity after low shear mixing, but increase to a significantly higher viscosity after high shear mixing. This has benefits at both low and high shear conditions. This is compared to a *granular* CWS *medium* cross-liked potato starch and a *non-granular* CWS *high* cross-linked potato starch, which have relatively high viscosities after low shear mixing but dramatically lose viscosity after high shear mixing.

(2) The properties described above for starches of the invention were not achieved for the same treatment of a *granular* CWS *high* cross-linked *waxy maize* starch. See Table 2, in this regard.

(3) The preferred starches are characterized in that slurries of them do not significantly increase viscosity under low shear conditions, the increase being less than 50%, and preferably less than 25%, of the maximum achievable under high shear conditions. This can be seen in Figure 4, for example.

The starches described by Papadopoulos, *et al.* in United States Patent No. 6,617,446, are very different. The Papadopoulos, *et al.* starches are not shear thickening. They are slow thickening. That patent teaches physically compressing processed starches to achieve slower hydration, slower viscosity build and better dispersibility.

The data in the Papadopoulos, *et al.* patent do not show any increase in viscosity related to the application of high shear. This is, importantly, the property that the present applicants describe and claim as their invention. The present application specifically claims this by stating that the processing is effective "to provide the characteristic that when a slurry of said starch is subjected to high shear the viscosity will increase toward a maximum and retain that viscosity throughout further low shear mixing and holding periods." Applicants illustrate this in Figure 1 and throughout the examples.

The different approach of Papadopoulos, *et al.* can be seen, for example, in the portion of the description extending from lines 53 to 62 of column 3, where it states:

> As the compacted CWS starches do not readily hydrate in solution, the *rate* of viscosity development is significantly *slower* than that of non-compacted CWS starches, particularly in cold water. This is particularly advantageous during processing of various compositions as it allows for ease of a variety of processing steps such as pumping, mixing, adding other ingredients, and homogenizing due to the low initial viscosity. However, *the viscosity does build to substantially the same final viscosity* as when a non-compacted CWS starch is used. (Emphasis added.)

Clearly, Papadopoulos, *et al.* are interested in delaying the onset of viscosity buildup, not affecting its ultimate level.

By their tests, the final viscosity of the Papadopoulos, *et al.* starches, once maximized at low shear conditions, does not rise when the shear is increased. This can be seen by looking at their results in Example 2 (slight decrease in viscosity from 34,000 to 32,000), Example 3 (three samples with slight decreases) and Examples 4 and 5 (slight increases). Clearly, they do not show viscosity increase with shear. They show slow thickening, not shear thickening.

Another factor which bears scrutiny is that Papadopoulos, *et al.* do not distinguish between degrees of cross-linking or types of starch, whereas applicants have determined that both play a significant role in meeting their stated objective and claimed criteria of effectiveness. Thus, not only is the process of Papadopoulos, *et al.* not described as producing applicants' intended results, but it could not be relied upon by a person skilled in the art to achieve the results inherently because the necessary teachings as to starting materials is not provided.

The small degrees of overlap of the description of Papadopoulos, *et al.* in terms of the types of starch suitable for their process and of some processing conditions, do not anticipate applicants' invention and would not render it obvious to the person skilled in the art. There is a total lack of direction and motivation for the person skilled in the art to modify the Papadopoulos, *et al.* teachings in any manner that would result in the present invention.

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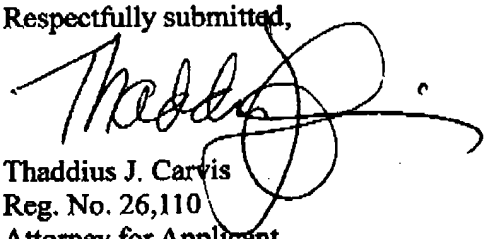
While claims 9-25 stand withdrawn from consideration as being drawn to nonelected invention, withdrawal of the restriction requirement and allowance of these claims are believed in order because the prior art does not show the central feature of the invention, which is common to and links all claims, namely the description of a shear thickening pregelatinized starch.

Applicants have made a significant improvement in starch technology by providing one that is shear thickening. No other starch having these properties has been described or otherwise enabled or made obvious. The claims clearly and concisely set this invention out in terms that patentably distinguish from the prior art. Accordingly, reconsideration and allowance of all claims are believed in order, and such actions are earnestly solicited. If applicants' representative can advance the application toward allowance by telephone, the examiner is requested to call him at the number listed below.

Respectfully submitted,



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